

LEVEL 4

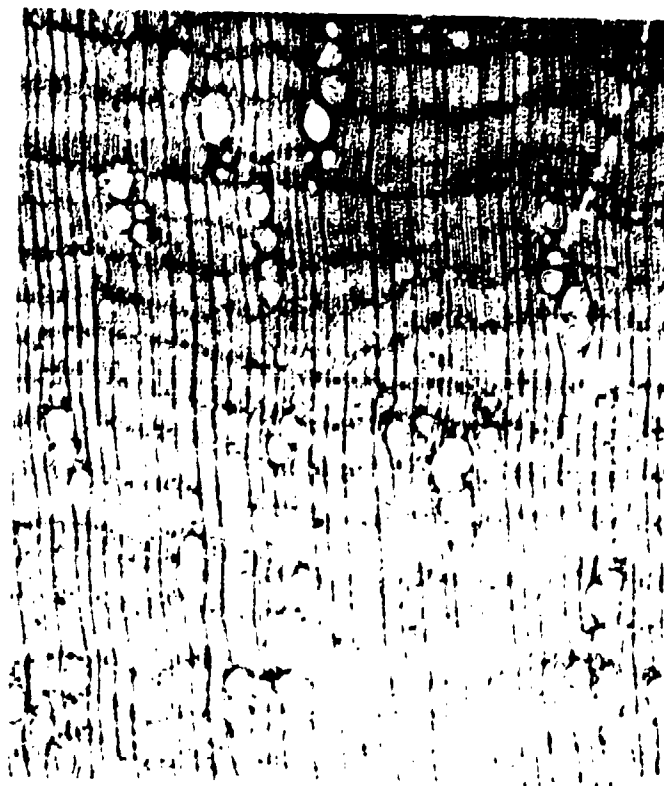
12

WOOD ANATOMY
OF THE
NEOTROPICAL SAPOTACEAE
XXVI. MYRTILUMA

RESEARCH PAPER FPL 397

FOREST PRODUCTS LABORATORY
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE
MADISON, WIS.

MAY 1981



DTIC
SELECTED
DEC 28 1981
H

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

81 12 23 003

AD A108906

DTIC FILE COPY

Abstract

Myrtiluma eugeniaefolia (Pierre) Baillon, the sole member of this genus, is limited to northern South America and the lower Amazon Basin. It was originally described as a species of Micropholis and at a much later date was reduced to synonymy under Pouteria. Anatomically it shows little affinity with Micropholis or Pouteria but would appear to be closely allied with Sandwithiodoxa. The wood is among the heaviest of the Sapotaceae.

Preface

The Sapotaceae form an important part of the ecosystem in the neotropics; for example, limited inventories made in the Amazon Basin indicate that this family makes up about 25 percent of the standing timber volume there. This would represent an astronomical volume of timber but at present only a very small fraction is being utilized. Obviously, better information would help utilization--especially if that information can result in clear identification of species.

The Sapotaceae represent a well-marked and natural family but the homogeneous nature of their floral characters makes generic identification extremely difficult. This in turn is responsible for the extensive synonymy. Unfortunately, species continue to be named on the basis of flowering or fruiting material alone and this continues to add to the already confused state of affairs.

This paper on Myrtiluma is the twenty-sixth in a series describing the anatomy of the secondary xylem of the neotropical Sapotaceae. The earlier papers, all by the same author and under the same general heading, include:

- | | |
|--|---------------------------------------|
| I. Bumelia--Res. Pap. FPL 325 | XIV. Elaeoluma--Res. Pap. FPL 358 |
| II. Mastichodendron--Res. Pap. FPL 326 | XV. Sandwithiodoxa--Res. Pap. FPL 359 |
| III. Dipholis--Res. Pap. FPL 327 | XVI. Paralabatia--Res. Pap. FPL 360 |
| IV. Achrouteria--Res. Pap. FPL 328 | XVII. Gambeya--Res. Pap. FPL 361 |
| V. Calocarpum--Res. Pap. FPL 329 | XVIII. Gomphiluma--Res. Pap. FPL 362 |
| VI. Chloroluma--Res. Pap. FPL 330 | XIX. Chromolucuma--Res. Pap. FPL 363 |
| VII. Chrysophyllum--Res. Pap. FPL 331 | XX. Manilkara--Res. Pap. FPL 371 |
| VIII. Diploon--Res. Pap. FPL 349 | XXI. Barylucuma--Res. Pap. FPL 372 |
| IX. Pseudoxythece--Res. Pap. FPL 350 | XXII. Pradosia--Res. Pap. FPL 373 |
| X. Micropholis--Res. Pap. FPL 351 | XXIII. Gayella--Res. Pap. FPL 374 |
| XI. Priourella--Res. Pap. FPL 352 | XXIV. Ecclinusa--Res. Pap. FPL 395 |
| XII. Neoxythece--Res. Pap. FPL 353 | XXV. Ragala--Res. Pap. FPL 396 |
| XIII. Poduluma--Res. Pap. FPL 354 | |

Publication in this manner will afford interested anatomists and taxonomists the time to make known their opinions and all such information is hereby solicited. At the termination of this series the data will be assembled into a single comprehensive unit.

WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE

XXVI. MYRTILUMA

By

B. F. Kukachka, Botanist^{1/}

Forest Products Laboratory,^{2/} Forest Service
U.S. Department of Agriculture

Introduction

Originally described as Micropholis eugeniaefolia Pierre in 1891 this species was transferred to Myrtiluma eugeniaefolia (Pierre) Baillon the following year, becoming the sole member of Baillon's new genus. Aubréville (1)^{3/} accepted Myrtiluma as a valid genus, although Eyma (3) earlier retained the species in Micropholis in Section Eumicropholis. Baehni (2) reduced Myrtiluma to synonymy in his ponderous genus Pouteria.

The wood of Myrtiluma ranks amongst the heaviest of the neotropical Sapotaceae and by this physical character alone it would not be confused with any species of Micropholis. Anatomically the wood exhibits little affinity with Pouteria (sensu Aubréville) but physically and anatomically is remarkably similar to Sandwithiodoxa (4) from which it differs primarily with respect to pore arrangement.

This species ranges from French Guiana to Venezuela and the northern Amazon Basin.

Description

General: Heartwood brown and sharply defined from the lighter colored sapwood; luster low and dull. Very hard and heavy with an average specific gravity of 1.15 for the specimens tested; specimens consisting entirely of heartwood will exceed 1.20. The wood of Myrtiluma ranks with the heaviest of the Sapotaceae.

1/ Pioneer Research Unit, Forest Products Laboratory.

2/ Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

3/ Underlined numbers in parentheses refer to literature cited at the end of this paper.

Anatomical:

Pores in loose clusters which are in radial or echelon arrangement (fig. 1). Solitary pores present but more commonly in radial multiples of 2-4. Maximum tangential pore diameter of individual specimens ranges from 118 μ m to 165 μ m with an overall average of 147 μ m.

Vessel member length averages of individual specimens range from 610 μ m to 830 μ m; average of all specimens was 740 μ m. Intervessel pit diameter is commonly 4-6 μ m. Sclerotic tyloses observed in all specimens and are very abundant in the heartwood. Perforation plates simple.

Axial parenchyma typically narrow banded and more or less regularly spaced (fig. 1). The individual bands are irregularly 1-3 (4) seriate and occasionally may be discontinuous or isolated. The individual cells may be thick-walled and free of contents or thin-walled and commonly with dark brown contents. Silica infrequent and limited to the thin-walled cells with dark contents.

Wood rays 1-2 seriate; thin-walled and thick-walled in the same ray. The maximum height of the biseriate portion ranging from 158 μ m to 483 μ m between specimens. Rays heterocellular; the marginals mostly square to slightly erect. Thick-walled ray cells are free of contents while the thinner walled cells contain dark brown contents (fig. 2); silica when present is limited to the thinner walled cells and usually obscured by the dark contents. The silica particles are spheroidal and attain a diameter of 20 μ m. Silica content of the wood ranged from 0.05 percent to a maximum of 0.31 percent as determined by chemical analysis. Vessel-ray pitting irregular in shape and size to linear and ovoid horizontally and vertically.

Wood fibers very thick-walled with minute lumina. Fiber length averages ranged from 1.30 mm to 1.84 mm with an overall average of 1.64 mm. Vascular tracheids abundant.

Diagnostic features: Wood very hard and heavy with an average specific gravity of 1.15; all specimens (thoroughly air dry) rapidly sink in water. Heartwood brown, dull; parenchyma banded; pores in small loose clusters which are in radial or echelon arrangement. Sclerotic tyloses common to abundant; many of the axial parenchyma cells and ray cells with thick walls and free of contents. Silica present but generally sparse. As viewed with a hand lens the transverse section resembles certain specimens of Neoxythece; very similar in a number of respects to Sandwithiodoxa (4) but here the pores are not clustered.

Notes

1. Sectioning of the heartwood of this species is rather difficult because the penetration of ethylenediamine, even under vacuum, is extremely slow.
2. Maguire 51699 and E. Oliveira 5794 which were received as Myrtiluma eugeniaefolia seem to belong in Neoxythece.

Literature Cited

1. Aubréville, A.
1961. Notes sur des Poutériées Américaines. *Adansonia* 1(2):180.
2. Baehni, Charles.
1965. Mémoires sur les Sapotacées. III. Inventaire des genres. Boissiera II; 54.
3. Eyma, P. J.
1936. Notes on Guiana Sapotaceae. *Rec. Trav. Bot. Neerl.* 33:198.
4. Kukachka, B. F.
1980. Wood Anatomy of the Neotropical Sapotaceae. XV. *Sandwithiodoxa*. USDA For. Serv. Res. Pap. FPL 359, For. Prod. Lab., Madison, Wis.

U.S. Forest Products Laboratory

Wood anatomy of the neotropical Sapotaceae: XXVI.
Myrtiluma, by B. F. Kukachka, FPL.
6 p. (USDA For. Serv. Res. Pap. FPL 397).

Myrtiluma eugeniaefolia (Pierre) Baillon, the sole member of this genus, is limited to northern South America and the lower Amazon Basin. It was originally described as a species of Micropholis and at a much later date was reduced to synonymy under Pouteria. Anatomically it shows little affinity with Micropholis or Pouteria but would appear to be closely allied with Sandwithiodoxa. The wood is among the heaviest of the Sapotaceae.

Accession For	
NTIS GMAI	<input checked="" type="checkbox"/>
ERIC TEB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	<input type="checkbox"/>
By <u>per</u>	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	

Table 1.--Myrtiluma eugeniaefolia; specimens examined and selected parameters^{1/}

Collector and number	Sp. gr.	VML	MPD	FL	Si ^{2/}	Source	Wood collection No. ^{3/}
		μm	μm	mm	%		
Maguire 24713	1.21	820	158	1.83	0.06	Surinam	SJR 44224
Maguire 24739	1.16	630	118	1.30	0.06	Surinam	SJR 44237
Maguire and Politi 28715	1.12	790	165	1.67	0.07	Venezuela	SJR 52262
Maguire and Politi 28742	1.13	610	158	1.51	0.12	Venezuela	SJR 52273
Pires 6824	$\frac{4}{4}/1.00+$	750	150	1.70	0.31	Brazil	IAN 98214
Plowman and Rosa 9098	$\frac{4}{4}/1.00+$	730	118	1.52	0.05	Brazil	--
Rosa, N.A. 1383	$\frac{4}{4}/1.00+$	730	158	1.74	--	Brazil	--
Silva, N.T. 3941	$\frac{4}{4}/1.00+$	830	150	1.84	--	Brazil	IAN 150811
Average	1.15	740	147	1.64	0.11		
Sandwithiodoxa (average)	1.09	750	145	1.61	0.29		

1/ Sp. gr. = specific gravity; VML = vessel member length; MPD = maximum tangential pore diameter; FL = fiber length; Si = silica.

2/ Silica content based on oven-dry weight of wood and determined by Martin F. Wesolowski, Chemist, FPL.

3/ IAN = Instituto Agronomica de Norte, Belem, Brazil; SJR = Samuel J. Record Memorial Collection, formerly at Yale University but housed at Madison, Wis.

4/ Specimens sink in water; not included in average.

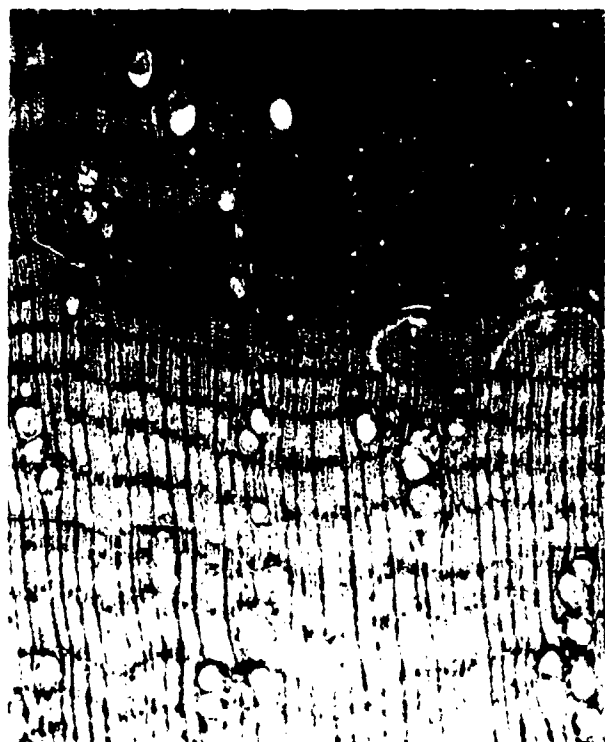


Figure 1.--Myrtiluma eugeniaefolia, typical arrangement of pores and parenchyma, all vessels with sclerotic tyloses (Maguire 24713) X 30.



Figure 2.--Same as figure 1, dark cells of rays and axial parenchyma are thin-walled, lighter colored cells are thick-walled. X 110. Note the association of thin-walled ray cells (dark) with the parenchyma bands.